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struction to Jews in skilled labor. The great need of such schools is very evident, and their small number is a subject of great regret.

Conclusion.—After having examined the conditions in which the Jews have to live in Russia, and the difficulties with which they have to struggle in their desire for self-improvement and civilization, can we be surprised at the number of them who seek refuge in this country? 77,000 Russian Jews arrived in the United States in 1904, and many more will follow them over the ocean, year after year, until the sparsely populated parts of Russia are opened to them, and until political equality gives them a fair chance in the struggle for life.

E. A. GOLDENWEISER.

MISLEADING STATISTICS OF COST OF PRODUCTION.

In the December (1904) number of the *Massachusetts Labor Bulletin* there appears an article on "Increases in the Cost of Production," in which some of the statistical methods used are open to serious question. The subject, which is limited in the article to the study of increases in cost of production due merely to increases in pay and decreases in hours of labor of employees (without reduction of pay), is one that is now attracting wide attention, and there is some danger that misinterpretation may be made of the statistics presented. It is, therefore, necessary to point out the need for caution in their use by showing some of the faults of the methods evidently used in their compilation.

First. In the matter of definition and classification, attention should be called to the fact that but about one-third of the returns are for occupations connected with what are generally understood to be manufacturing industries. Yet the implication by the text of the article in its introductory paragraph (p. 289), where it speaks of the increase in the cost of production of "manufactured articles," and again in the discussion of the data presented on page 298, where it mentions the "manufacturer's standpoint" in regard to the problem of reduction of hours and increase of pay, is that the statistics deal directly with manufacturing industries. As a matter of fact, of the 479 returns shown in the tables, only 169, or about one-third, are for "Industries" that would fall under the census classification as manufacturing industries, 126 are for occupations (although called "Industries"), and of the remainder, 27 are for laundries and 157 for "Building." The question as to what constitutes manufacturing has been discussed at length in the Twelfth Census ("Manufactures," vol. i, pp. xxxiv-xxxvii), and the distinction between manufacture and hand trades clearly laid down.

Of the 25 "Industries" presented, 12 show themselves, by title, to be occupations merely; for example, engineers, teamsters, switchmen, etc.

A further question arises in regard to what constitutes a "Branch of occupation." From the use of this term on pages 296–297 the conclusion is evident that in some instances a difference in the returns, either in number of hours worked or in pay, for what, from the nature of the work performed, is generally understood to be a certain occupation, has had the effect of constituting each such return as a separate "Branch of occupation" in these statistics. As a result, there are fifteen returns for "Compositors" under "Printing, Publishing, and Book-binding," and ten for "Foremen," fifteen for "one horse" under "Teamsters," etc.

The errors entering into the statistics because of this lack of proper definition and classification will be pointed out in the discussion concerning averages.

Second. The scope of the inquiry was evidently limited to cities. It was, therefore, inevitable that a large part of the manufacturing population of the State should not be represented. But even the limitation of the inquiry to cities should not have excluded such important manufacturing industries as the textile, paper, cigar, piano, candy, cloth, and tanning industries. Some of these are important factors in the industrial life of the cities.

Yet even in the "Industries" represented the number of returns presented for an "industry" is often disproportionate to its importance. For example, there are but 23 returns for "Shoe Factories," 15 for "Breweries," 13 for "Iron Foundries," while for "Printing, Publishing, and Book-binding" there are 40, for "Teamsters" 74, and for "Building" 157.

Third. The question of the representativeness of the returns cannot be answered either by statements in the text or the tables. For how many men or establishments do these statistics stand? What proportion do the men bear to those employed in all industries in the cities or the State? How many persons enter into the return for each given occupation and rate of pay?

Fourth. The question arises in regard to whether the returns presented are all that were obtained in the canvass or simply those instances that show an increase. In other words, is there a bias? It may be that the actual conditions have been shown, but it seems strange that in *every* instance a positive increase in cost of production is indicated. Some explanation in the text for such a phenomenon is desirable.

Fifth. The averages of increases in cost of production are of faulty construction, and likely to be misleading. As has been pointed out in the discussion of definition and scope, the nature of the data collected, and the classification of it, are both open to serious criticism. The deficiencies have a direct bearing on the construction of the average. On page 297, following a detailed discussion of the increases in the various "Branches of occupation," occurs the statement that "the general average was 17.27 per cent., the extremes being 5 per cent. and 66.67 per cent." The effect of the disproportionate number of returns under the different classifications gives undue prominence to certain occupations and industries in the computation of the general average. The criticism holds, whether the general average is obtained from the averages of the different "Industries" or directly from the 479 different percentages of increase shown for "Branches of occupations."

But, furthermore, any such method of obtaining an average increase in the *cost of production*, whether for all "Industries" combined or for separate "Industries," is fundamentally incorrect, even though no objection could be raised on the score of improper emphasis given to certain data. In the determination of changes in the *cost of production* of an article, *due to changes in the cost of labor*, whether by increase of pay or decrease in hours, the pay not being lowered, there must be taken into account:—

(1) The extent to which each employee is concerned in the production of the article.

(2) The amount of pay each receives per unit of time worked. The statement of occupation is not essential, but it is highly instructive, and therefore is desirable. A practical way of obtaining changes in cost of production due to the causes discussed, is to compare the cost of labor per man per hour for the two periods; that is, the total amount of the pay (per hour) of each separate employee, divided by the number of employees. For example, the 50 per cent. increase of pay of one foreman in a shop from $3 to $4.50 for ten hours' work has less influence in the determining of changes in cost of production than the 15 per cent. increase of pay of his ten subordinate moulders, from $2 to $2.30, or the 10 per cent. increase for their twenty helpers, from $1 to $1.10. Obviously, the increase in cost of production, due to the rise in wages, is 15.1 per cent., and not 25 per cent. (the average of the percentages of increase of the occupations stated).

The data, the lack of which was referred to under the topic of representativeness of the returns, should always be stated. Certain of the facts are absolutely necessary for the computation of accurate statistics of changes in cost of production.

It will now be in order to touch upon some good points which are to be found in the article: such are the publication of careful foot-notes where the nature of the data requires; the warning against use being made of the rates of pay shown in the tables for any computation to show weekly rates or weekly incomes for workmen; and, especially, the publication of the detailed table for each of the years 1900–04 (pp. 299–305), which has a large amount of information that, taken in connection with the history of labor movements in the industries affected, has a good deal of value. To illustrate, it is possible to analyze the changes taking place into three sets,—increases of pay with hours remaining constant, decreases of hours, but not of pay, and both increase of pay and decrease of hours. The following table shows some results of such an analysis made for certain kinds of employment:—

	Increase of Pay Only.	Decrease of Hours Only.	Increase of Pay and Decrease of Hours.	Total Returns.
"Shoe Factories"	—	21	2	23
"Teamsters"	57	13	4	74
"Building"	38	71	48	157

In conclusion, it may be remarked that, while the statistics presented in the article are of some value, and while it may be true that there has been a decided increase in the cost of production of manufactured goods, and also of cost of labor in other forms of industry, such as the building trades, due to increases of daily pay or decreases in hours worked for an undiminished pay, and that, as a result of these causes, prices in general have been raised, yet it must be said that neither the data presented nor the averages derived from them in the article can be accepted as competent and sufficient proof in the determination of the question.

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